UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

SUBJECT:	CLEAN AIR ACT INSPECTION REPORT HBM Electrochemical Company, Lansing, Illinois
FROM:	Linda H. Rosen, Environmental Engineer AECAB (IL/IN)
THRU:	Nathan Frank, Section Supervisor AECAB (IL/IN)
TO:	File

BASIC INFORMATION

Facility Name: HBM Electrochemical Company

Facility Location: 2800 Bernice Road, Building 18+19, Lansing, Illinois

Date of Inspection: 09/16/2022

EPA Inspector(s):
1. Linda H. Rosen, Environmental Engineer
2. Emma Leeds, Environmental Engineer

Other Attendees:
1. Nick Mandich, President, HBM Electrochemical Company (HBM)'
2. Alfred Banks, Chrome Technicians, HBM

Contact Email Address: hbmco@msn.com

Purpose of Inspection: chromium electroplating inspection

Facility Type: chromium electroplating facility

Regulations Central to Inspection: National Emission Standard for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks, 40 C.F.R. Part 63, Subpart N.

Arrival Time: 2:00 p.m.

Departure Time: 4:05 p.m.

Inspection Type:
☒ Unannounced Inspection
☐ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials
☒ Stated authority and purpose of inspection
☒ Provided Small Business Resource Information Sheet
☐ Small Business Resource Information Sheet not provided.
☒ Provided CBI warning to facility

The following information was obtained verbally from Nick Mandich unless otherwise noted.

Process Description:
HBM refurbishes used steel and stainless steel rods from hydraulic cylinders and returns them to the customer. Another company, Field Services, rents part of HBM's shop to perform the mechanical work on the cylinders including removing the rods from the cylinders before HBM refurbishes them and then putting them back into the cylinders after HBM refurbishes them.

In the refurbishment process, HBM strips the rods of the existing hexavalent chromium exterior by reversing the flow of the electrical current in the electroplating tanks. HBM then prepares the surface and plates chrome back onto the rod. The facility operates two open chromic acid tanks that can both strip and plate. One is 1,500 gallons ("big tank" or "L tank") and the second is 675 gallons ("medium tank" or "N tank"). There is a third 200-gallon tank ("small tank"), that is not currently used. About 4 rods are plated per day. Stripping takes 35-40 minutes, but plating takes up to 8 hours. The facility does not operate any separate wash tanks.

The plating bath consists of chromic acid flakes, water and sulfuric acid. The facility's consultant, Scientific Controls, tells the facility how much sulfuric acid to add. No wetting agent or fume suppressant is used. The facility has four rectifiers but only two are currently being used. One has a maximum capacity of 6,000 amperes (amps) but only 3,000 amps are actually used. The second has a maximum capacity of 5,000 amps but only 2,000 amps are used. A third one is not being used due to the 200-gallon tank needing a new heating system but the facility is planning to get the tank and rectifier back online. The facility is not planning to use the fourth rectifier. The actual total facility amperage is no more than 7,000. The facility uses lead anodes in the electroplating tanks, which they reform once or twice per year in a small melting pot fueled by propone.

The chromic acid tanks are controlled by a 3-stage composite mesh scrubber with an air flow of 9,000 cfm.

Staff Interview: The facility operates 8 am to 4 pm. Two people work in plating. Another two people work on the mechanical side at Field Services. Business has increased due to COVID because there is a supply issue with new rods and cylinders.

The facility uses Jeff Zak from Scientific Controls to handle its environmental recordkeeping and reporting including the completion of the following reports: NESHAP report, ongoing compliance report, and the annual emission report. The facility has a Lifetime Operating Permit.

The tanks were installed many years ago and the only changes that have been made is that new liners have been put in to prevent steel corrosion. The liners were changed within the last 2 years. The liners are made out of high temperature PVC. The 1,500-gallon L tank has a high temperature PVC skirt and the 675-gallon N tank has a Teflon skirt at the top. Other facility changes include changing out the rectifier switches and replacement of heat exchanger equipment including a new water boiler in 2021.

The scrubber was installed in about 1996-1997. At the end of each operating day, the facility reads the scrubber differential pressure at the magnehelic gauge and records it. The acceptable range is a 3.2 baseline plus or minus 2 inches of water column. This value comes from stack testing conducted in 2011. The facility normally operates at about 3.9-4.0 inches of water column and Nick said the scrubber never operates out of range. We asked if the magnehelic gauge is ever calibrated and Nick said no. Once per week on Friday, the facility records the amp-hours.

The scrubber was stack tested a while ago, around 2005 and was supposed to have been tested every year for three years afterwards as part of a settlement but then Nick's father, the previous owner of the facility, passed away and the scrubber wasn't tested again until 2011.

The facility has an operation and maintenance (O&M) plan for the scrubber and Nick said they perform the preventative maintenance activities in the plan but they do not record these activities as discussed in the O&M plan. They also don't record malfunctions if they occur. There are no malfunctions of the scrubber unless there is a power outage in which case the tanks stop rectifying. Nick said the scrubber has to be operated when the tanks are operating or the fumes are unbearable. The scrubber composite mesh pads have never been replaced but they are cleaned every couple of years. The pads are also sprayed twice per day within the unit. The facility checks the scrubber ductwork for drips. In 2010, the facility changed the scrubber blower.

On May 5, 2022, Scientific Controls asked HBM via email to provide information to complete its Ross permit review.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

We observed the tank that was not operational but that the facility intends to get online after they make changes to the heating system (photo 2). We observed the 675-gallon N tank (photo 3). It was plating at the time of the inspection. The tank was open and there were vents on the side through which air is drawn to the scrubber (photo 4) via a fan. We observed the inactive tank (photo 5). We observed the 1,500-gallon L tank, which was plating a rod (photo 6) and we observed the side vents that draw air to the scrubber (photo 7). We saw the meter that tracks the amp-hours (photo 8).

We observed the scrubber (photo 9) and the gauges for the pressure drop at each stage of the scrubber. The facility sums the three pressure drops to get the total pressure drop. The left gauge read 0.5 inches of water column (photo 12) and is associated with the most coarse filter mesh, the middle gauge read 0.4 inches of water column (photo 11) and the right gauge was not reading properly as the needle was all the way to the right of the gauge past where the numbers are located (photo 10). We observed that the motor belt was vibrating, indicating that the scrubber was operating (photo 13).

Finally, we observed the new hot water boiler. There were two tanks per boiler. The boiler is natural gas-fired.

Photos and/or Videos: were taken during the inspection.

Field Measurements: were not taken during this inspection.

RECORDS REVIEWED

These documents were reviewed but not taken from the facility:

- Diagram of scrubber system (photo1); and
- Log form that facility uses to record the daily scrubber pressure drops and the weekly amp-hours.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

On 9/22/2022, we sent an email to Nick Mandich, requesting that the following information be submitted to EPA:

- The performance test conducted in either 2010 or 2012, and the one previous to that;
- 2 years of pressure drop readings (July 2020 – July 2022);
- O&M Plan;

- Lifetime Operating Permit; and
- 2 years of reports (2020, 2021) for “Plating and Polishing”, “Ongoing Compliance” and NESHAP

Compliance Assistance: We informed Nick that he needs to record any deviations that occur and the corrective actions. For instance, the issue with the pressure gauge needs to be recorded and the follow up corrective action recorded.

Concerns: We expressed concern that the scrubber gauge on the right was not reading properly in that the needle was located all the way to the right and appeared frozen. On September 20, 2022, Nick sent Emma Leeds an email stating that upon his inspection at the end of the operating day, he determined that the needle on the that scrubber gauge was physically stuck and did not move back down when the vacuum hose was removed (as it should have). Nick stated that he tapped the face of the meter with his pocket knife and the needle moved back down into position. The next day, when turning on the scrubber, Nick stated that he observed that the needle on the gauge was in proper operation as it should be. Nick stated that the day before our inspection, he had opened the scrubber inspection doors to check inside while it was running (to see if the sprayers were operational) and that this action may have caused the needle of the pressure gauge to move past the “5” mark. Nick stated that he would look into a replacement gauge if needed. He also attached a photo of the gauge with the needle in the proper position.

DIGITAL SIGNATURES

Report Author: Linda H. Rosen

Section Supervisor: Frank, Nathan Digitally signed by Frank, Nathan Date: 2022.10.21 16:43:47 -05'00'

APPENDICES AND ATTACHMENTS

1. Media Appendix

APPENDIX A: DIGITAL IMAGE LOG

1. **Inspector Name:** Emma Leeds	2. **Archival Record Location:** Region 5 Electronic Records Center

Image Number	File Name	Date and Time (incl. time zone and DST)	Description of Image
1	P9160102.JPG	2022:09:16 14:37:41	Scrubber diagram
2	P9160103.JPG	2022:09:16 15:10:20	Photo of tank that needs heating changes to operate
3	P9160104.JPG	2022:09:16 15:12:41	675-gallon N tank operating
4	P9160105.JPG	2022:09:16 15:15:59	Side vents on tank where air is drawn to scrubber
5	P9160106.JPG	2022:09:16 15:19:44	Tank that is completely inactive
6	P9160107.JPG	2022:09:16 15:23:19	1500-gallon L tank
7	P9160108.JPG	2022:09:16 15:24:27	Side vents on 1500-gallon L tank
8	P9160109.JPG	2022:09:16 15:26:36	Amp hours meter
9	P9160110.JPG	2022:09:16 15:33:02	Scrubber
10	P9160111.JPG	2022:09:16 15:35:11	Scrubber pressure gauge on right with needle frozen all the way to right
11	P9160112.JPG	2022:09:16 15:35:19	Middle scrubber pressure gauge reading 0.4 inches of water column
12	P9160113.JPG	2022:09:16 15:35:24	Left scrubber pressure gauge reading 0.5 inches of water column
13	P9160114.JPG	2022:09:16 15:37:59	Belt vibrating on scrubber motor